REMARKS

Claims 22-30, 32, 34, 35 and 37-39 have been rejected under 35 USC § 103(a) as being unpatentable over British Publication 1,257,827 in view of Kroeker et al., U.S. Patent No. 4,969,643. However, as hereinafter described, it is believed that such claims are not shown or suggested in the cited references, and as such, withdrawal of the Examiner's rejection under 35 USC § 103(a) is respectfully requested.

Claim 22 defines a dampening cylinder having a cylindrical housing, a piston slidably extending through a cavity in the housing and a flange projecting from the piston so as to divide the cavity in the housing into first and second portions. A flow conduit has a first end communicating with the first portion of the cavity and a second end communicating with the second portion of the cavity. The flow conduit includes first and second control valves for controlling the flow of fluid between first and second portions of the cavity. Each flow control valve includes a flow regulator having a plurality of user selectable discrete settings for controlling the rate at which the fluid flows through a corresponding flow control valve. The fluid flowing between first and second portions of the housing flows solely through the flow conduit. As hereinafter described, nothing in the cited references shows or suggest such a structure.

The British '827 specification discloses a device for balancing the forces inertia of reciprocating stands of cold rolling mills. As best seen in Figures 2 and 3, an air cylinder is provided having a piston slidably received therein which defines first and second working spaces in the air cylinder. The air spaces are interconnected by a conduit that includes first and second maximum pressure valves and by bypass valve 34. It is intended that the pressure in each working space be equal. In order to accomplish the task, each of maximum pressure valves 35 is adjusted so as to satisfy condition:

C. $X=P_m.S$

wherein C and X are the rigidity and deformation of spring 50, respectively; P_m is the maximum specific air pressure in the working spaced for a given steady rolling process; S is the effective area of disk valve 48.

If movement of the piston disturbs the equality, one of the maximum pressure valves 35 opens and the excess air is transferred from one working space to the other. Bypass valve 34 is provided to facilitate the equalization of the air pressure in the working spaces in response to an extreme pressure in one of the working spaces. As described, it can be appreciated that the structure provided the British '827 specification merely regulates the maximum pressure within opposite sides of air cylinder 1. In other words, the pressure valves and the bypass valve disclosed in the British '827 specification merely provide a mechanism for controlling the pressure at which maximum pressure vanes 35 open. The British '827 specification provides no mechanism for controlling the rate of air flow through the conduit interconnecting the first and second working spaces or for providing a discrete metered fluid flow therethrough. Consequently, in such circumstances wherein controlled movement of the piston is required, the structure disclosed in the British '827 specification is inadequate. For example, if a large force is placed on one end of the piston that urges the piston to slide through a cylinder at one rate, it may be highly desirable when the force is removed to have the piston to return to its original position, at a second, slower rate. This operation can be significant in certain applications where the cylinder controls movement of an object like the transfer deck described in the specification of the present application. It can appreciated that when heavy articles are positioned on the transfer deck, it is imperative the deck travel at such a speed as to not injure the operator thereof. However, if a heavy article is placed on a deck utilizing the maximum pressure valves and the bypass valve disclosed in the '827 reference and such article generates greater than the maximum

pressure, the pressure valves and the bypass valve would open such that air would quickly flow from one side of the cylinder to the other. As a result, the transfer deck would drop quickly in a hazardous manner.

Similarly, when the articles are subsequently removed from the transfer deck, it is imperative that the deck return to its original position at such a speed as to not injure the operator thereof. If the heavy object was removed from the deck utilizing the maximum pressure valves disclosed in the '827 specification, the deck would quickly return to its original position (in order to reach equilibrium). This, in turn, could provide a significant hazard to the operator. By providing flow regulators, as required by independent claim 22, an operator has the ability to control the speed at which the piston slides through the cylinder, thereby overcoming the disadvantages associated with the structure disclosed in the cited reference.

The Kroeker et al., '643 patent is directed to an improved exercise apparatus. Initially, applicant must question the combination of a device for balancing forces of inertia in a rolling mill and a hydraulic system for an exercise apparatus. That said, the combination suggested by the Examiner does not provide for the dampening cylinder as defined an independent claim 22. The exercise apparatus as disclosed in the '643 patent includes a hydraulic cylinder having the piston passing therethrough. A ring or collar about the piston separate the interior of the cylinder into first and second portions. Outlet lines are connected to each portion of the cylinder and include combustible flow control means for restricting the flow of fluid from each portion of the cylinder. In addition, the hydraulic cylinder includes first and second inlet lines operatively connected to a reservoir. Each portion of the cylinder draws fluid from the reservoir in response to suction generated by operation of the hydraulic cylinder. See, Kroeker et al., U.S. Patent No. 4,969,643, Column 4, lines 54 +. As such, unlike the dampening cylinder of independent claim 22, the fluid does not flow **between** the first and second portions of the cylinder does not

flow solely through a single flow conduit (underlining added). As such, it is believed that independent claim 22 defines over the cited reference and passage to allowance is respectfully requested.

Claims 23-29 depend either directly or indirectly from independent claim 21 and further define a dampening cylinder not shown or suggested in the prior art. It is believed that claims 23-29 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

Claim 30 defines a dampening cylinder incorporating a cylindrical housing and a piston slidable through the housing. The housing includes first and second openings therein. A first conduit has a first end connected to the first opening in the housing for communicating with the first portion of the cavity in the housing and a second conduit has a first end connected to the second opening in the housing for communicating with the second portion of the cavity in the housing. A control valve structure is disposed between the first and second conduits to control the flow of fluid between first and second portions of a cavity in the housing. The control valve structure includes a control valve with a flow regulator having a plurality of user selectable settings. The flow regulator provides for the discrete metering of the fluid flowing through the first flow control valve. The flow control valve structure also includes a second control valve with a flow regulator having a plurality of user selectable settings. The flow regulator of the second control valve provides for the discrete metering of the fluid flowing through the second control valve. As defined, the fluid flowing into and out of the housing flows solely through the first opening and the fluid flowing into and out of the second portion of the housing flows solely through the second opening. As hereinafter described, the structure is entirely absent from the cited references.

As described with respect to claim 22, the structure disclosed in the British '827 specification incorporates a bypass valve. Therefore, unlike the structure defined in independent

claim 1, each portion of the cylinder disclosed in the British '827 specification has first and second openings therein. As a result, fluid flowing into and out of each portion of the cylinder pass through multiple openings which, in turn, increases difficulty of controlling the flow of fluid therebetween. Similarly, the cylinder disclosed the Kroeker et al. '643 patent has outputs and inlets to each portion of the cylinder. Once again, the structure differs significantly from the dampening cylinder defined in independent claim 30. As a result, it is believed that independent claim 30 defines over the cited references and passage to allowance is respectively requested.

Claims 32, 34-35 and 37 depend either directly or indirectly from independent claim 30 and further define a dampening cylinder not shown or suggested in the prior art. It is believed that such claims are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

Similar to claim 30, claim 38 defines a dampening cylinder wherein fluid flows into and out of the first portion of the housing solely through a first opening in the housing and fluid flows into and out of the second portion of the housing solely through a second opening in the housing. As heretofore described, neither of the cited references show or suggest such a structure. As a result, it is believed that independent claim 38 defines over the cited references and passage to allowance is respectfully requested.

Claim 39 depends directly from independent claim 38 and further defines a dampening cylinder not shown or suggested in the prior art. It is believed that claim 39 is allowable as depending from an allowable base claim and in view of the subject matter of the claim.

In order to more particularly define the invention for which protection is sought, applicant has added new claim 40 directed towards a dampening cylinder. The dampening cylinder defined in independent claim 40 requires the cylinder housing having a piston slidably extending through a cavity therein. A flange projects from the piston and is positioned within the cavity so

as to divide the cavity in the housing to first and second portions. A flow conduit is also provided. The flow conduit has a first end communicating with the first portion of the cavity in the housing and a second end communicating with the second portion of the cavity in the housing in order to allow fluid to flow between the first and second portions of the cavity in the housing. The flow conduit includes first and second control valves having flow regulators. The flow regulator of the first control valve has a plurality of user selectable discrete settings for controlling the flow rate and for providing a discrete fluid flow of the fluid flowing from the first portion to the second portion of the housing. The flow regulator of the second control valve has a plurality of user selectable discrete settings for controlling the flow rate and providing a discrete metered flow of the fluid flowing from the second portion to a first portion of the housing. As hereinafter described, neither of the cited references show or suggest such a structure.

As described with respect to independent claim 22, nothing in the '827 specification shows or suggests a mechanism for controlling the rate of air flow through the conduit interconnecting first and second working spaces or for providing a discrete metered flow therebetween. With respect to the Kroeker et al., '643 patent, the flow control valves merely controls the flow of fluid exiting the hydraulic cylinder. Unlike the dampening cylinder defined in independent claim 40, neither of the flow regulators disclosed in the '643 patent control the flow of fluid from one side of the hydraulic cylinder to the other since the fluid exiting the hydraulic cylinder is deposited in a reservoir and the fluid is drawn into each side of the cylinder by means of suction. As a result, it is believed that new independent claim 40 defines over the cited references and passage to allowance is respectfully requested.

Applicant believes that the present application with claims 22-30, 32, 34-35, and 37-40 is in proper form for allowance and such action is earnestly solicited.

The Applicant believes there are no fees associated with this transmission. However, the Commissioner is hereby authorized to charge payment of any fee associated with this or any other communication or credit any overpayment to Deposit Account No. 50-1170.

Respectfully submitted,

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